

Application Serial No: 09/814,487
In reply to Office Action of 16 September 2004

Attorney Docket No. 80095

AMENDMENTS TO THE CLAIMS

1. (currently amended) An instrumented fiber optic tow cable system for measuring the a temperature profile of a fluid using a plurality of optical fibers, which comprises:

a low strain armored fiber optic cable having a core, a jacket concentric with said core and defining an annular space between said jacket and said core said core having an interior and an exterior;

a jacket concentric with the exterior of said core;

a plurality of armor wires radially spaced outside around the interior exterior of said core in the annular space and defining at least one radially located layer circumferentially concentric with and spaced from the interior of said core;

a plurality of optical fibers spaced around the exterior of said core in a plurality of layers in the annular space interspersed in said core in among a said plurality of armored armor wires in the outermost radially located layer of said at least one radially located layer of said plurality of armor wires to

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exposes the optical fibers to the temperature of said fluid;

a light source arranged to send light signals to said plurality of optical fibers which affect scatter said light signals according to the temperature profile of data in said fluid;

receiver means for receiving the scattered light signals from said plurality of optical fibers; and

processing means for analyzing said scattered light signals received by said receiver means to determine a temperature profile in of said fluid.

2. (currently amended) The instrumented fiber optic tow cable system of claim 1 wherein said processor processing means includes a display unit for getting a visual presentation of said temperature profile data.

3. (currently amended) The instrumented fiber optic tow cable system of claim 2 wherein the said plurality of optical fibers are placed in the outermost layer of said armor wires.

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4. (currently amended) The instrumented fiber optic tow cable system of claim 1 wherein said plurality of armor wires are steel wires.

5. (currently amended) The instrumented fiber optic tow cable system of claim [[4]] 1 wherein said plurality of armor wires are KEVLAR™ fibers.

6. (currently amended) The instrumented fiber optic tow cable system of claim 1 wherein each of said plurality of optical fibers are enclosed in a steel tubes tube to preserve the integrity of said plurality of optical fibers.

7. (currently amended) The instrumented fiber optic tow cable system of claim 1 wherein each of said plurality of optical fibers are is surrounded by a plurality of steel armor wires of smaller diameter than that of said plurality of armor wires.

8. (canceled).

9. (currently amended) The instrumented fiber optic tow cable system of claim 1 wherein Raman scattering effects are used to infer the temperature of the fiber plurality of optical fibers.

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10. (currently amended) The instrumented fiber optic tow cable system of claim 6 wherein a plurality of stainless steel tubes replace said plurality of armor wires and each of said plurality of stainless steel tubes has a diameter less than or equal to the diameter of the corresponding replaced armor wire of each of said plurality of armor wires.

11. (canceled).

12. (canceled).

13. (canceled).

14. (currently amended) The instrumented fiber optic tow cable system of claim 1 which includes a processing system means making use of Raman scattering.

15. (currently amended) The instrumented fiber optic cable system of claim 14 which wherein said processing means also uses ~~optical fiber~~ Optical Fiber Time Domain Reflectometry (OTDR).

16. (new) The instrumented fiber optic tow cable system of claim 6 wherein each of said plurality of optical fibers enclosed in said steel tubes is surrounded by a plurality of

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steel armor wires of smaller diameter than that of said
plurality of armor wires.